REMARKS/ARGUMENTS:

Claim 1 is amended by reintroducing a limitation that was inadvertently dropped from the text of claim 1 in the response filed on 4-15-03. Claims 1-11 are pending in the application. Reexamination and reconsideration of the application, as amended, are respectfully requested.

Claims Rejection Under 35 U.S.C. § 102:

Claims 1, 3-5, and 7 are rejected under 35 U.S.C. § 102(b) as anticipated by Olsen (U.S. Patent No. 4,392,655). This rejection is respectfully traversed.

As stated in responses to previous Office Actions, the present invention provides a fluid-tight dynamic clearance seal comprising a sealing member circumferentially disposed between the stationary member and the moving member. When the sealing member and the moving member are assembled, they define an initial continuous and uniform gap, having a size that allows the fluid to fill the gap but prevents the fluid from flowing through the gap under an operating pressure differential between the first and the second side.

The terms "continuous gap" and "uniform gap" are defined on page 6, lines 10-22, of the instant specification. The term "continuous gap" "means that the sealing member and the moving member do not have any points of direct contact." The term "uniform gap" means that the distance between the moving and the stationary member does not vary significantly so as to compromise the hydraulic seal formed therebetween. Accordingly, the instant specification teaches that the initial uniform gap is obtained by "closely controlled radial dimensions of an outer wall of the piston and the internal wall 28 of sealing member and a high assembly precision." The initial uniform and continuous gap, which is established during assembly, remains uniform and continuous when operation pressure is applied.

In the present invention, in order to prevent radial deformation and/or displacement of the sealing member that would compromise the uniformity and continuity of the gap between the moving member and the sealing member, the

fluid is not allowed to seep between an outer surface of the sealing member and an inner surface of the stationary member. Accordingly, a "fluid-tight relationship" is required between an outer surface of the sealing member and an inner surface of the stationary member (page 5, lines 30-31). The instant specification explains that any sealing method between the sealing member and the stationary member may be used, as long as it provides a reliable seal.

Independent claims 1 and 7 include all key elements of the present invention. Both claims require an initial continuous and uniform gap defined by a sealing member and a moving member (piston in claim 7) and a fluid-tight relationship between the sealing member and the stationary member. The gap has a size that allows the fluid to fill the gap but prevents the fluid from flowing through the gap under an operating fluid pressure. The gap remains continuous and uniform under operating pressure.

Olsen does not anticipate amended claims 1 and 7, because he does not teach a sealing member having a fluid-tight relationship with the stationary member (or housing structure in claim 7). To the contrary, Olsen requires filling a gap 23 between the housing 2 and the seal body 19 with fluid to compress the seal body radially inward toward the shaft 4 (column 3, lines 62-66, column 4, lines 3-16). A "static seal 17/27" noted by the Examiner is formed when the bottom of seal 19 is compressed against horizontal sealing surface 16 of the housing. Accordingly, as shown in Figures 1 and 4, the seal 17/27 does not prevent a fluid from seeping between an outer surface of the sealing member and an inner surface of the stationary member and, thus, does not provide a "fluid-tight relationship" with the stationary member as required by the present invention.

Examiner appears to believe that because Olsen describes gap 26, which is "configured to allow fluid to fill it while maintaining acceptable leakage," "[f]or a system where leakage is not tolerable, it is inherent that the gap would be configured to prevent leakage since leakage would not be 'acceptable'." Applicants respectfully disagree. Although inherency is a legally viable method for

interpreting a reference, the "examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teaching of the applied prior art." Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990).

A review of the Olsen reference leads to the conclusion that there is no reasonable basis to believe that the Olsen reference inherently discloses a gap between the sealing member and the moving member that prevents the fluid from flowing through the gap as required in the present invention. To the contrary, Olsen describes a gap that keeps "leakage of high-pressure fluid ... within acceptable limits" (column 3, lines 3-9). Olsen further notes that "[s]ince its difficult to control the gap between the seal body 19 and the shaft 4 ..., it is desirable to maintain the gap 26 as large as possible without incurring excessive leakage to reduce the criticality of manufacturing tolerance" (column 4, lines 33-38).

Thus, Olsen does not teach a high precision assembly of a seal structure, which is required to obtain closely controlled radial dimensions of an outer wall of the piston and the internal wall of sealing member, which the present inventors found to be necessary for preventing a fluid leakage. Absent any specific teaching of how gap 26 should be formed to prevent a fluid leakage, it does not necessarily follow from Olsen that the gap 26 could be configured in a way that would prevent leakage of a fluid. Therefore, Olsen does not disclose, expressly or inherently, all elements of independent claims 1 and 7. In particular, Olsen does not teach a sealing member having a fluid-tight relationship with the stationary member and a gap between a sealing member and a moving member having a size that prevents the fluid from flowing through the gap.

Olsen does not make instant claims 1 and 7 obvious because it teaches away from the present invention. As discussed above, Olsen relies on deformation of the seal body under high-pressure to control leakage within predetermined limits (column 3, lines 45-55). The deformation is achieved by filling the gap 18 between

the housing and the seal body with the fluid, which radially compresses the seal (column 2, lines 58-65). Thus, Olsen teaches away from fluid-tight relationship between the sealing member and the stationary member that prevents the fluid from seeping therebetween. Also, Olsen teaches away from forming a gap between the sealing member and the moving member that prevents the fluid from flowing through the gap by teaching a leakage of fluid within certain limits.

Therefore, in view of Olsen, those skilled in the art would not have expected that an effective seal could be formed by establishing a fluid-tight relationship with the stationary member and by establishing a gap between the sealing member and the moving member that prevents the fluid from flowing through the gap. Therefore, claims 1 and 7 are neither anticipated nor rendered obvious by Olsen. Claims 3-5 depend from claim 1 and are also patentable over Olsen for at least the same reasons as claim 1.

Claims Rejection Under 35 U.S.C. § 103:

Claims 1, 3-5, and 7 are also rejected under 35 U.S.C. § 103(a) as obvious over Sakata (U.S. Patent No. 6,206,378) in view of Olsen. This rejection is respectfully traversed.

The Examiner appears to believe that it would have been obvious to make a gap of Olsen as small as possible to prevent leakage as taught by Sakata. Applicants disagree. There must be some reason or suggestion in either Sakata or Olsen for selecting and combining the elements as proposed, other than the knowledge learned from the applicants' disclosure. Interconnect Planning Corporation v. Feil, 227 USPQ 543, 551 (Fed. Cir. 1985). Applicants respectfully submit that no reason or suggestion for the proposed combination can be found in either reference.

Sakata is directed to a seal between two stationary parts: a stationary spindle bolt 1 and a stationary disk 8 (column 3, lines 9-19 and Figures 1-5), while Olsen is directed to a seal between a movable shaft and a stationary housing. In

view of the substantial differences in seal structures of Olsen and Sakata, a skilled artisan would not have found it obvious to selectively pick and choose the separate elements and concepts from these references so as to arrive at the claimed invention without using the present claims as a guide. Such hindsight reconstruction of the invention is not a proper criteria for determining obviousness.

Furthermore, Sakata and Olsen teach away from a combination suggested by the Examiner. Sakata teaches a clearance between the seal piece 3 and the spindale bolt 1 being made as small as possible (column 3, lines 38-45), while Olsen states that "... it is desirable to maintain the gap 26 as large as possible without incurring excessive leakage"(column 4, lines 33-38). Based on these contradictory teachings, a skilled artisan would have been discouraged from combining the teachings of Sakata and Olsen as suggested by the Examiner.

Thus, it is respectfully submitted that the ordinarily skilled artisan, working without the benefit of the applicant's specification, would have had no motivation to combine the features of the cited references to arrive at the present invention as defined by claims 1 and 7. Therefore, claims 1 and 7 are patentable over Olsen in view of Sakata. Claims 3-5 depend from claim 1 and are also patentable over Olsen in view of Sakata for at least the same reasons as claim 1.

Claims 2 and 8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Olsen (in view of Sakata) in further view of Holland (U.S. Patent No. 4,501,120). This rejection is respectfully traversed.

Claims 2 and 8 depend from claims 1 and 7, respectively. As discussed above, claims 1 and 7 are patentable over Olsen in view of Sakata. Holland does not remedy the defect of Olsen and Sakata and is not relied upon by the Examiner for such. Holland is cited by the Examiner for the teaching of the sealing member and moving member made of ceramic materials. Holland has no teaching whatsoever of a continuous and uniform gap between the sealing member and the moving member that prevents the fluid from flowing through the gap. Therefore, claims 1 and 7 and

their dependent claims 2 and 8 are patentable over Olsen in view of Sakata and in further view of Holland.

Claims 1, 3-7, and 9-11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kostohris (U.S. Patent No. 5,493,954) in view of Olsen in view of Sakata. This rejection is respectfully traversed.

As discussed above, claims 1 and 7 are patentable over Olsen in view of Sakata. Kostohris does not remedy the defect of Olsen and Sakata and is not relied upon by the Examiner for such. The Examiner cites Kostohris for teaching a seal assembly comprising a high-pressure seal and annular-low pressure seal that surrounds the sleeve seal and compresses it against the plunger (column 1, lines 54-59). Kostohris has no teaching whatsoever of a continuous and uniform gap between the sealing member and the moving member that prevents the fluid from flowing through the gap. Therefore, independent claims 1 and 7 and their dependent claims 3-6 and 9-11 are patentable over Kostohris in view of Olsen and in view of Sakata.

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (213) 337-6700 to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,

HOGAN & HARTSON L.L.P.

Dated: September 17, 2003 By: _____

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